

**CHLOROCLYSTA TRUNCATA HUFN. (LEP.: GEOMETRIDAE):
A REMARKABLE INCREASE IN THE INCIDENCE OF
F. RUFESCENS STROM. AT DARTFORD**

BRIAN K. WEST

36 Briar Road, Dartford, Kent DA5 2NH.

OVER MUCH OF the British Isles, *Chloroclysta truncata* is polymorphic with the relative incidence of the forms varying geographically; superimposed upon this pattern many industrial areas have developed additional melanic forms. North-west Kent is an adjacent of the urban industrial conurbation of London and it has a very different *truncata* population from that of rural east Kent some forty miles distant.

This paper may be considered a sequel to West (1996) in which the forms of *truncata* found in north-west Kent were described and illustrated in colour. The decline in atmospheric pollution consequent upon the implementation of the Clean Air Acts has occasioned considerable changes in the relative incidence of the various forms.

In 1996, it was noted that the two most extreme melanic forms were in decline: f. *nigerrimata* Heydemann had declined from about 20% in the 1970s to less than 6%, and f. *mixta* Prout from about 20% to below 4% over the same period. Both were surviving at about 1% in 2000. It may be recalled that f. *mixta* is a *rufescens*-like insect lacking the minute white markings and also having more melanistic hindwings.

Since 1996, f. *perfuscata* Haw. has declined from almost 50% to 36% in 2000 (Table 1), and at Dartford is no longer the commonest form. The decline was anticipated and it was thought that its place would gradually be filled by pale forms, particularly *saturata* Steph. and the even paler *griseofasciata* Müll. or perhaps by the appearance of *russata* Hb., noted as common in rural east Kent by Chalmers-Hunt (1971). However, this has not occurred and instead the void has been filled largely by f. *rufescens* identical to that illustrated by Skinner (1984), which until very recently has been the only variety of the *rufescens* complex, other than *mixta*, that has been observed at Dartford. This particular variety seems to be largely confined to the main industrial areas, whereas those illustrated in South (1939), Ford (1955) and Barrett (1902), with a more diffuse and sometimes more yellowish, orange-brown blotch and a greater intensity of the white markings, predominate in rural areas. The form *ochreatea* Schille better describes these paler and more varied insects, and *fusco-rufescens* Prout the slightly melanistic form depicted by Skinner.

In 1993, f. *rufescens* comprised 17% of the *truncata* at Dartford. From 1994 until 1998, inclusive, the incidence remained between 20% and 23%, increasing in 1999 to 36.8% and in 2000 to 46.5%, a phenomenal increase over a period of two years, and quite unanticipated. Also, in the last two years, a small number of these *rufescens* did not conform to the model depicted by

Skinner, i.e., *fusco-rufescens*, but to the models illustrated in the other textbooks mentioned above, i.e., approaching *ochreatea*. This may be regarded as a minor change towards a less melanistic *truncata* population here accompanying the decline of *perfuscata* and other melanic forms.

The anticipated increase in the incidence of the greyish *saturata* has not materialised to any great extent; it increased from 6.7% in 1993 to 10.7% in 1995, but has averaged only 9.7% for the six years from 1995 to 2000. The paler *griseofasciata* was not recorded here until the noting of a singleton in 1993, to be followed by another in 1998, two in 1999 and three in 2000.

It is essential, when monitoring the forms of a polymorphic species, that they be readily identifiable and can be allocated to a distinct named form. At Dartford in the 1970s, *rufescens*, having separated *mixta*, presented a homogeneous and distinct form; in retrospect it would seem that *fusco-rufescens* might have been the preferable name for these darker specimens

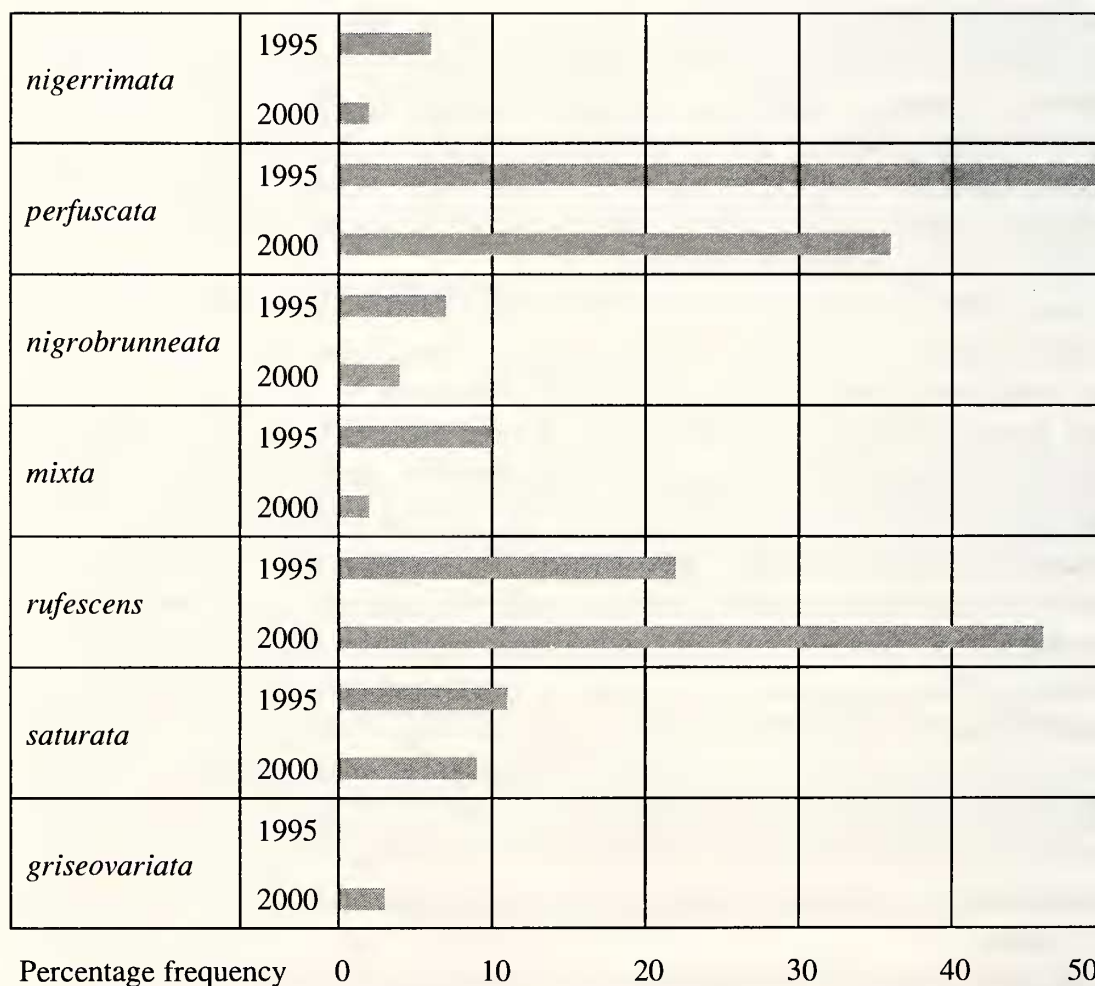


Table 1. Relative incidence of all forms of *Chloroclysta truncata* at Dartford in 1995 and 2000.

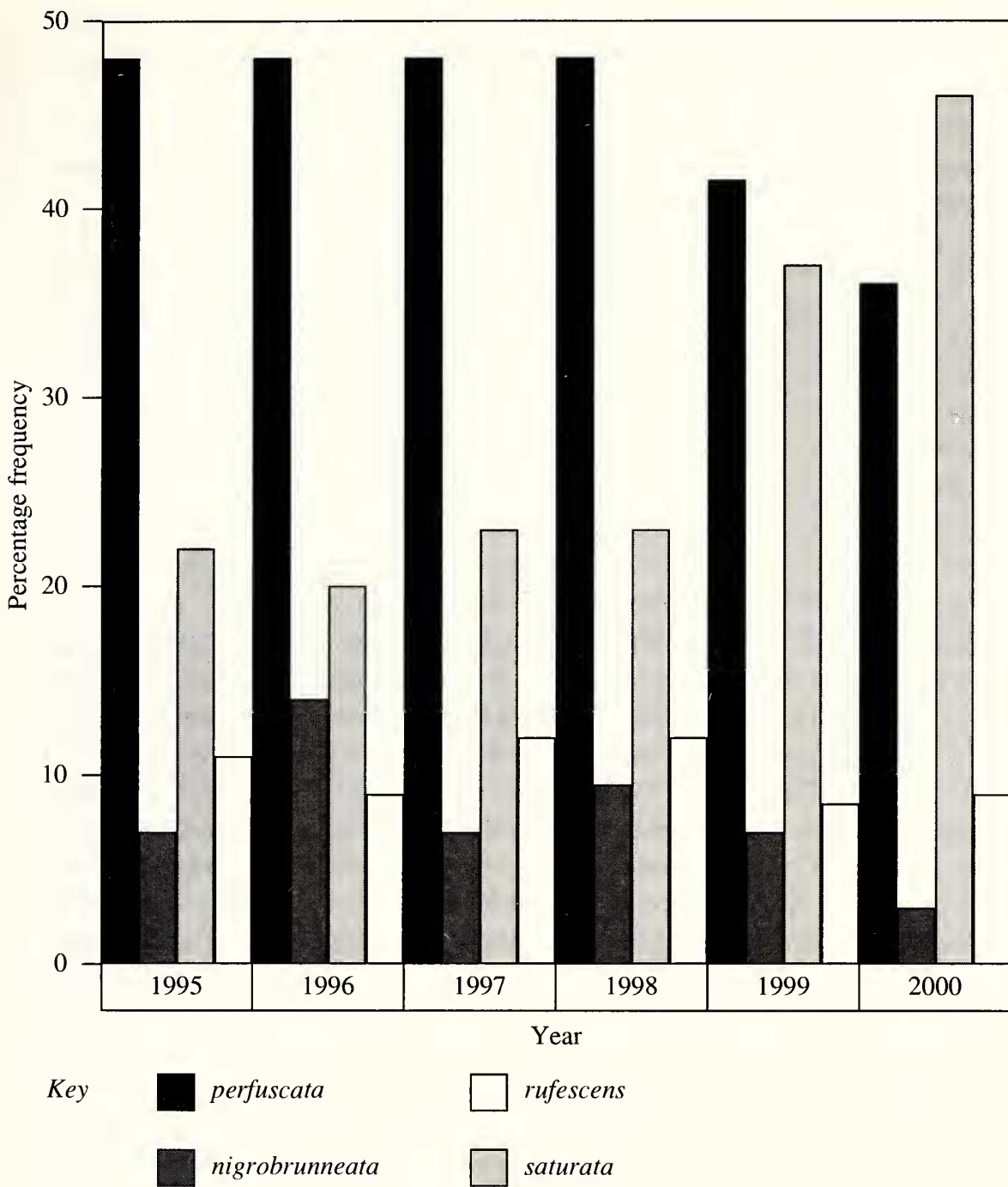


Table 2. Annual relative incidence of the four major forms of *Chloroclysta truncata* at Dartford, 1995 to 2000.

characteristic of industrial areas suffering from considerable atmospheric pollution. Over the years a more difficult problem has arisen with forms *perfuscata* and *nigrobrunneata* Heydemann; many specimens, especially when worn, are difficult to separate as the brown areas on the forewing tend to be darker than is customary with specimens from non-urban localities. Being a dark form, *nigrobrunneata* has declined relatively, and to a greater extent than *perfuscata*. In 2000, the combined percentage of these two forms

had become less than that of *rufescens*, whereas in 1993 the combination of these two dark forms at over 60% was more than three times as common as *rufescens* which then was 17.3%.

Thus, the changing pattern of polymorphism in *C. truncata* at Dartford for some time in the future will remain an intriguing picture, somewhat unpredictable, regarding its speed and direction.

References

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Clouded yellow breeding in urban London

A nearly fully grown caterpillar of the Clouded Yellow butterfly *Colias croceus* was swept from one of the many lucerne plants sprouting from between heaps of bulldozed earth, crushed brick and other assorted rubble on a derelict site on the River Thames at Woolwich, south-east London, (OS grid reference TQ 431793, Vice County 16 – West Kent), on 1.viii.2000. Although a regular migrant to Britain, appearing throughout much of the country, in urban London I have only ever seen this butterfly on derelict “brownfield” sites adjacent to the Thames. These sparsely-vegetated but floristically diverse areas of bare earth, crushed brick and twisted metal are surprisingly rich in scarce and unusual warmth-loving invertebrates.— RICHARD A. JONES, 135 Friern Road, East Dulwich, London SE22 0AZ. (E-mail: bugmanjones@hotmail.com)

Callistus lunatus (F.) (Col.: Carabidae) at Box Hill in 1964

Among some insects lately shown to me by my friend Keith Lewis I was much surprised to see an example of this beautiful and now very rare ground-beetle, which he had taken at Box Hill, Surrey, on 25 August, 1964. It was found under cover of some sort – possibly a chalk stone. This is one of the only two records for the area, and indeed anywhere, since a specimen was taken at Shoreham, West Kent, in 1953 and, not long after, a small colony was found at Brook near Wye, East Kent, by C. A. W. Duffield.

As my friend Prof. J. A. Owen has remarked, it is a curious fact that the chalk-loving *C. lunatus* is not known to have ever occurred on the South Downs – e.g. in Sussex – but only on the North Downs (from the London district to Folkestone and Dover) and the Chilterns, perhaps once only (Streatley, J. R. Tomlin).— A. A. ALLEN, 49 Montcalm Road, Charlton, London SE7 8QG.